



## A Geographical Study of Crop Combination in Man Tehsil of Satara District

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### Abstract:

*Crop combination is well known cropping pattern in rainfall deficient region. Man tehsil is situated in the drought prone area in the eastern part of Satara district. It suffering from low rainfall and farmers suffer from scarcity of water for his agriculture. Hence he cultivates more than one crop in their farm. Out of 9 circles only Dahiwadi circle have minimum crop combination of 4 crops namely Jowar, Bajra, Maiz and Onion. Remaining circles farmers cultivates 9 to 10 crops in their agriculture throughout in the year. Sugarcane is cultivated only in Andhali, Mhaswad and Kukudwad circle because of availability of water for irrigation in Andhali dam in Andhli, Rajewadi dam in Mhaswad and availability of sugar factory in Kukudwad and Mhaswad circle.*

**Keywords:** *Crop Combination, Circle, Cropping Pattern*

### Introduction:

The study of crop-combination analysis is an important aspect in the study of agricultural geography. Firstly, it provides sufficient understanding of individual crops. Secondly, it helps us in interpreting some aspects of social and economic environment of the region. It further indicates the problems and basis for agricultural planning.

There are number of scholars who have contributed on the aspect of crop combination. The combination analysis was originally introduced into geographical research by Weaver (1954) through his outstanding study of crop combination in Mid-Western United states. The purpose of procedure is to establish and designate crop combination which is established by the closest resemblance to the actual crop percentages of the theoretical distribution. Thomas (1963) and Coppock (1964) used a modified version of Weavers method produced not only crop and livestock combinations but also combinations of

enterprises in England and Wales Coppock took into account rank in recognizing the leading crops. Singh (1974), Doi (1959) and other scholars have modified this technique involving the examination of cropland occupancy by various crops with the help of standard statistical, algorithm, namely the least squares.

Among the other geographers who have either modified the Weaver's techniques by Doi and Rafiullah may be worth mentioning. To get clear view of crop combination and comparative purpose this study is carried out by implementing two different methods proposed by J. C Weaver and Raffiullah. The analysis of crop combination regions in Man tehsil is considered as a unit for the agricultural year 2021-22. Man tehsil is located in western part of Satara district having near about 50 to 75 cm rainfall throughout the year and suffer from scarcity of water for agriculture as well as domestic use due to drought. The main focus of present study is to

identify the cropping pattern applied by the farmers in this critical climatic condition.

### Objective:

The main objective is to study the spatial analysis of cropping pattern and combination of different crops in Man tehsil.

### Study Area:

Man tehsil is located in eastern drought prone area of Satara district. The tehsil have only river named Man which is seasonal and have water only in rainy season. Due to origin of river Man, the tehsil has name Man and the region is

known as ‘*Mandesh*’. River Man originates at Kalasakarwadi 25 km away from western side of Shikar Shingnapur at the height of 917 meters from the sea level and flows northwest to south East. The Study region lies between  $17^{\circ} 27'14''$  to  $17^{\circ} 54'05''$  North to  $74^{\circ} 21'47''$  East to  $74^{\circ} 54'09''$  East longitudes and covers 1454.9 sq. km the total area. It has 46.07 percent net sown area to total geographical area having 150787 hectare and is mostly occupied by cereal crops i.e. 75.94 percent. As per census 2011 there are 106 villages and only one urban center in tehsil having 225634 population and no doubt it is lives in rural area i.e. 89.31percent.

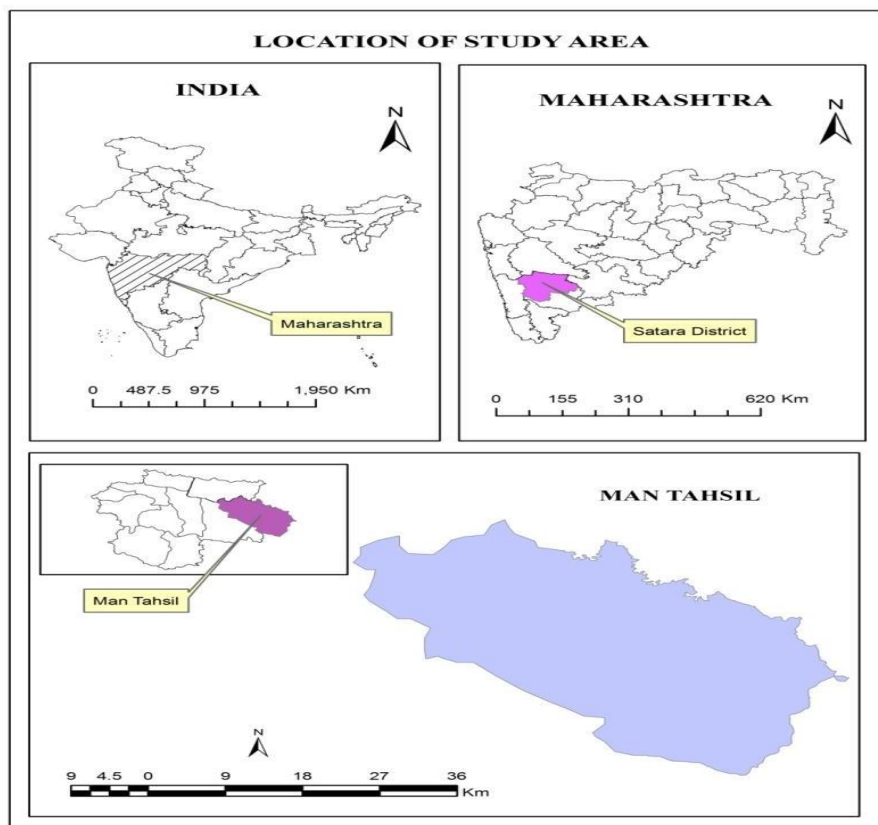


Fig. 1

### Data Source and Methodology:

The present study based on secondary data collected from district census handbook and Taluka Krushi Adhikari Karyalay of Man. The collected data processed by using statistical technique used by Weaver, which is applied for

identify the crop combination regions in the Middle West (USA). For better understanding the combination of different cropping pattern is tabulated and represented by using map of Man tehsil. The theoretical curve for the standard measurement was employed i.e. as follows.

Monoculture= 100 per cent of total harvested crop land in one crop

2-Crop Combination= 50 per cent in each of two crops

3- Crop Combination = 33.33 per cent in each of three crops

4- Crop Combination = 25 per cent in each of four crops

5- Crop Combination = 20 per cent in each of five crops

10-Crop Combination = 10 per cent in each of ten crops

$$SD (d) = \sqrt{\frac{\Sigma d^2}{n}}$$

Where,  $d$  is the difference between the actual crop percentage in a given areal unit and the appropriate percentage in the theoretical curve,  $n$  is the number crops in a given combinations.

As Weaver pointed out, the relative, not absolute value being significant, square routes were not extracted so, the actual formula used was as below

$$SD (d) = \frac{\Sigma d^2}{n}$$

### Analysis of Crop Combination:

A study of crop combination is vital for understanding of the cropping pattern in a particular region. Weaver was the first attempt to use statistical technique to establish the crop combination of the Middle West (USA). This technique is applied for the regionalization of crop combination in Man tehsil for the 2021-22.

The variance values derived from the calculation by Weaver's method are given in table 1 and fig. 2. It represents the details about the number of crops for the whole tehsil as well as for each circle in the tehsil. Ten crop combinations are found for whole Man tehsil, such as jowar, bajara, maiz, mong, onion, wheat, fodder, sugarcane and other pulses (i.e. J+B+Ma+Mo+On+W+F+H+S+Op). Taking in to account, Andhali (J+B+On+Ma+H+Op+Mo+F+W+S), Kukudwad (J+B+Ma+S+F+W+On+Mo +H+Op)

Table 1: Man Tehsil - Crop Combination Variance Values Calculated by Weaver's Method

Sr. No.	Tehsil	Monoculture	2 Crop Combination	3 Crop Combination	4 Crop Combination	5 Crop Combination	6 Crop Combination	7 Crop Combination	8 Crop Combination	9 Crop Combination	10 Crop Combination	Crop Combination Index
1	Mardi	4899.54	520.19	142.48	66.14	76.87	80.68	92.54	97.75	--	--	J+B+Ma+Mo+F+W+H
2	Dahiwadi	4703.22	540.90	179.07	99.86	101.62	--	--	--	--	--	J+B+Ma+On
3	Malawadi	4742.15	675.49	170.15	108.77	85.28	78.17	76.98	76.71	78.28	--	J+Ma+B+On+Op+Mo+W+F
4	Andhali	4281.63	651.56	193.48	117.97	103.09	98.41	99.59	97.66	95.77	93.49	J+B+On+Ma+H+Op+Mo+F+W+S
5	Gondawale Bk.	4698.04	563.36	165.71	105.23	94.12	88.72	89.94	--	--	--	B+J+Ma+On+Mo+W
6	Kukudwad	4939.04	428.92	166.25	141.97	125.64	116.07	109.19	105.52	100.99	100.17	J+B+Ma+S+F+W+On+Mo+H+Op
7	Var-Malawadi	4684.78	449.24	175.10	109.46	105.60	107.99	--	--	--	--	B+J+S+Ma+W
8	Mhaswad	4248.64	462.89	196.45	149.24	132.77	126.03	119.26	112.57	106.70	105.22	B+J+Ma+F+On+W+S+Mo+H+Op
9	Shingnapur	4920.49	476.18	141.06	94.19	92.97	94.51	99.45	--	--	--	J+B+Ma+Mo+On+Op
10	Tehsil	5090.39	506.83	158.43	121.39	103.07	98.84	93.97	91.42	88.48	85.12	J+B+Ma+Mo+On+W+F+H+S+Op

Source : Tehsil Agriculture office Man (2021-22)

Abrivations : J = Jowar, B = Bajara, Ma = Maize, W = Whear, H = Harbhara, Mo = Mong, Op = Other Pulses, On = Onion, S = Sugarcane and F = Fodder and Mhaswad (B+J+Ma+F+On+ W+S+

Mo+H+Op) circles have also ten crop combination as like tehsil but the pattern is different from the tehsil as well as each other fig. 2.

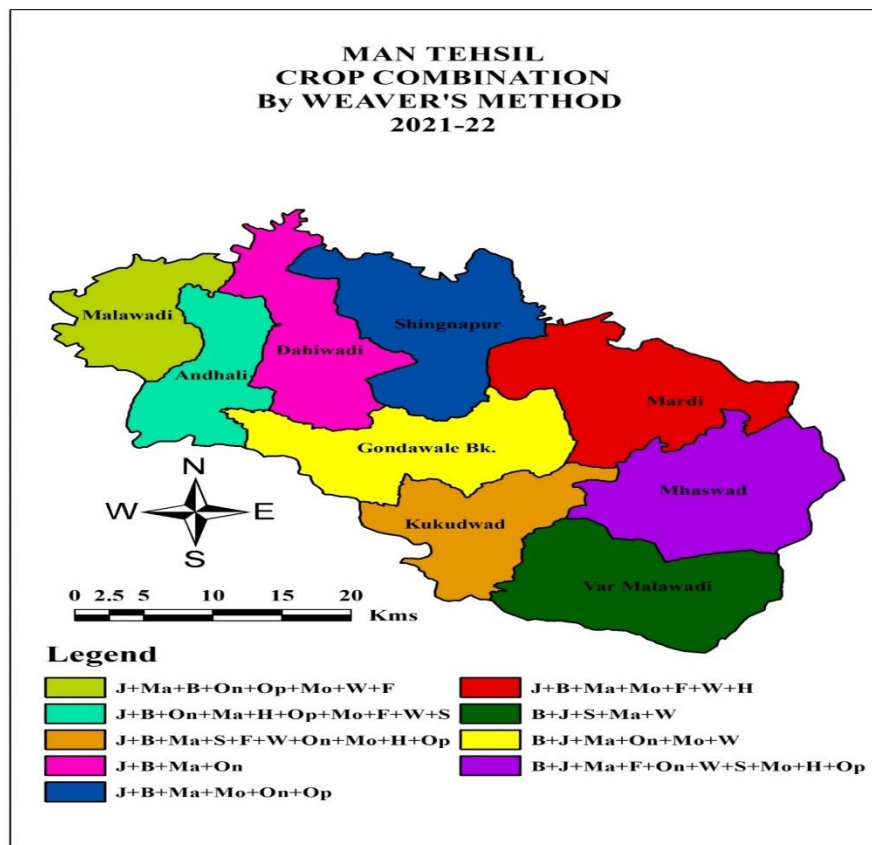


Fig. 2

Four crop combination is observed in Dahiwadi circle viz. jowar, bajara, maiz and onion. Five crop combination is found in Var-Malawadi circle i.e. bajara, jowar, sugarcane maize and wheat. Six crop combination is observed in Gondawale Bk. circle having crops are bajara, jowar, maize, onion, mong and wheat and in Shinganapur circle combination of jowar, bajara, maize, mong, onion, and other pulses is observed. Seven crop combination is observed in Mardi circle with jowar, bajara, maize, mong, fodder, wheat and harbhara crops. Finally eight crop combination is found in Malawadi circle having with jowar, maize, bajara, onion, other pulses, wheat and fodder.

### Conclusion:

Man thesil is continuously suffered from scarcity of rainfall and inadequacy of water for irrigation. After 5 to 6 years the farmers are facing the drought condition. Farmers have not a permanent source of water throughout the year. Hence they prefer to cultivate more crops in one land and apply the multiple cropping pattern in their agriculture. The big farmers those are able to provide the irrigation facilities can be cultivate cash crops such as sugarcane and other small farmers are cultivate only cereal and pulse crops in their farm. They are also prefer to dairy

farming as supplementary business related to agriculture.

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